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[Amended German pages 3 and 3a]

From International Patent Reference WO 96/31304 and from "Breakout Prediction for Continuous Casting by Fuzzy Mealy Automata", by J. Adamy, Proceedings of the 3rd European Congress of Intelligent Techniques and Soft Computing EUFIT, Aachen, August 29-31, 1995, pages 754-759, a dynamic fuzzy system known as a fuzzy automaton is known for early breakout prediction in continuous casting.

From US Patent 3,272,621, a method and an apparatus for controlling a process involving idle time is known. The method comprises an evaluation of input signals in such a way that process output responses are set in relation to known input information. The input evaluation criteria are represented in one or more of the integrator, proportional and differential process responses.

From German patent disclosure DE 44 20 800 A1, a fuzzy PID controller is known in which, to shorten the calculation time needed to ascertain the controlling variable, the control quantity is minimized to two rules by limiting the relationship functions uses; the fuzzifications are freely selectable as differential and defuzzification methods.

The object of the invention is to improve a control unit with fuzzy properties in such a way that the control procedures, in particular the integration and differentiation procedures, can be varied and modified more simply.

This object is attained with the control unit according to the invention as defined by claim 1.

It is an advantage of the control unit of the invention that the properties of static fuzzy logic devices and conventional linear dynamic control elements are combined in the form of temporally discrete dynamic fuzzy logic control elements. Thus the control unit can advantageously be constructed solely with control elements that each systematically have dynamic fuzzy properties.

It is also advantageous that the control unit of the invention can be programmed and parametrized entirely using standard fuzzy control unit software. For instance, the control unit of the invention can thus advantageously be used in either software or hardware form or both.

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It is especially advantageous that the transfer properties of the fuzzy logic control elements can be modified in a targeted and clearly understood way. Based on fuzzy logic control elements with an initially in particular virtually linear control unit characteristic, desired control unit nonlinearities can advantageously be introduced in a targeted way. For instance, in the simplest way, in the control unit of the invention a certain control unit characteristic ...

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